DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
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21 December 2001

MEMORANDUM FOR US EPA
NCEA (MD-52)
RTP, NC 27711
ATTN: ANNIE M. JARABEK

FROM: Kyung O. Yu
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SUBJECT: Consultative Letter, AFRL-HE-WP-CL-2002-0001, Intravenous kinetics of radiolabeled iodide in tissues of adult male Sprague Dawley rat dosed with $^{125}I^-$ plus carrier.

1. This consultative letter presents as additional male rat data that was not available for publication in the technical report (AFRL-HEST-WP-TR-2000-0076; Effects of Perchlorate on Thyroidal Uptake of Iodide with corresponding Hormonal Changes) submitted in July 2000. These data have been used in development of a physiologically based pharmacokinetic model for the male rat (AFRL-HEST-WP-CL-2001-0005).

2. Male Sprague-Dawley (SD) rats (n = 6 per time point) were dosed with $^{125}I^-$ plus carrier (33 μg/kg $^{127}I^-$ in physiological saline) via a single tail vein injection. They were sacrificed at 15 min, 1, 2 and 4 hr post-dosing to collect thyroid, serum and skin as well as stomach, intestine and their contents after CO_2 asphyxiation. Methods to analyze the $^{125}I^-$ levels in tissues are detailed in the technical report (AFRL-HEST-WP-TR-2000-0076).

3. Table 1 illustrates iodide levels in tissues of male rat. At 0.5 hr post-dosing, the highest $^{125}I^-$ levels were detected in the thyroid followed by stomach contents. After 1 hr post-dosing, the concentration ratios of tissue:serum were greater than one in stomach contents and skin, which suggests iodide sequestration in these tissues. Large standard deviations in the stomach contents data at 1 and 4 hr post dosing indicate the dynamic states of this tissue during the experimental time frames.

Table 1. $^{125}I^-$ concentration in tissues of SD male rat dosed with $^{125}I^-$ plus carrier (33 μg/kg)

Time points	Thyroid total* (μg/g)	Serum (ng/mL) total / free	Stomach contents total (ng/g)	Intestine contents total (ng/g)	Skin total (ng/g)
15 min	2.84 ± 2.69	44.7±15.0 / 37±12	126 ± 113	24 ± 17	31.9 ± 20.2
1 hr	14.68 ± 4.06	50.5±5.9 /40.5 ± 4	545 ± 429	51 ± 20	65.5 ± 15.7
2 hr	20.31 ± 6.84	36.6±3.9 /29.9 ± 3	458 ± 179	30 ± 8	52.1 ± 17.8
4 hr	34.89 ± 13.83	32.0±6.2 /25.9 ±4.7	535 ± 350	32 ± 15	56 ± 11.7

Data are mean ± standard deviation., n = 6
*Total includes bound iodine and free iodide.

4. For further information, please contact me by phone: (937) 255-5150 ext. 3176, fax: (937) 255-1474 or e-mail: kyung.yu@wpafb.af.mil.

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1st Ind, AFRL/HEST 21 December 2001

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This letter report has been coordinated at the branch level and is approved for release.

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